

E 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 E  
N 35

**TYPHOON TERESA**  
BEST TRACK TC-34W  
14 OCT-27 OCT 94  
MAX SFC WIND 80KT  
MINIMUM SLP 963MB

**LEGEND**

- 6-HR BEST TRACK POSITION
- a SPEED OF MOVEMENT (KT)
- b INTENSITY (KT)
- c POSITION AT XX/0000Z
- TROPICAL DISTURBANCE
- TROPICAL DEPRESSION
- TROPICAL STORM
- TYPHOON
- ◆ SUPER TYPHOON START
- ◇ SUPER TYPHOON END
- ◆◆◆ EXTRATROPICAL
- ◆◆◆ SUBTROPICAL
- \*\*\* DISSIPATING STAGE
- F FIRST WARNING ISSUED
- L LAST WARNING ISSUED

193

30

25

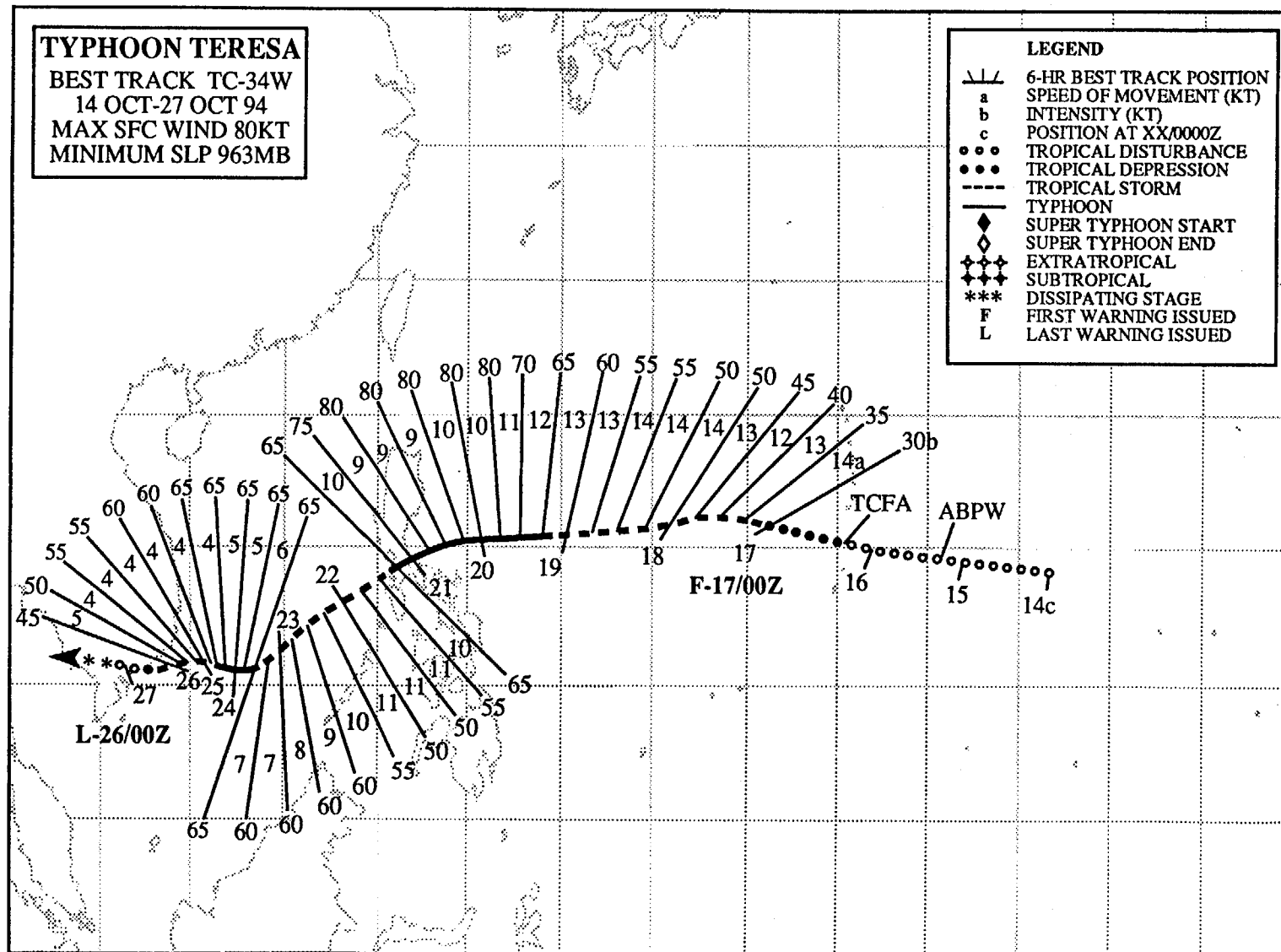
20

15

10

5

EQ



## TYPHOON TERESA (34W)

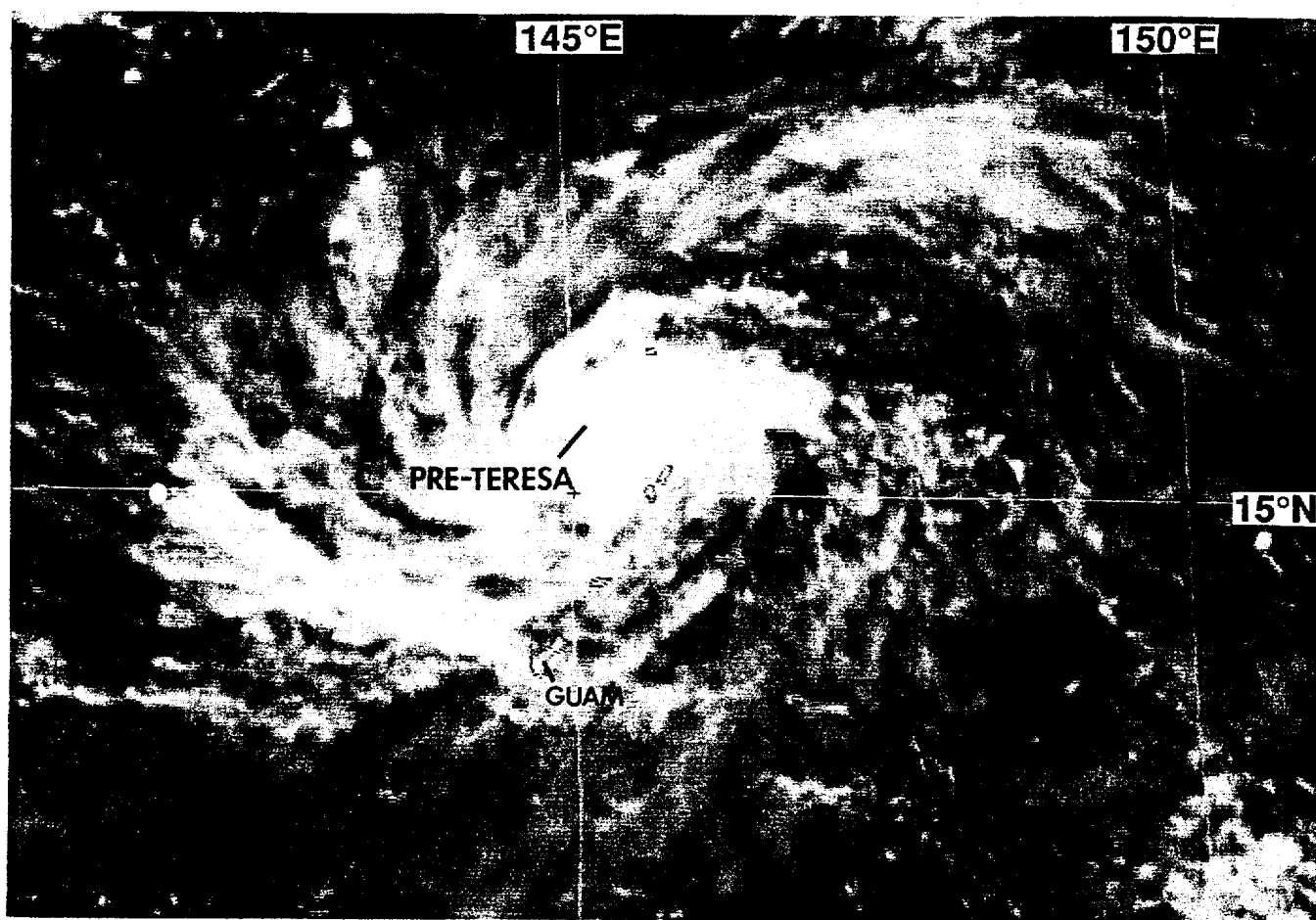


Figure 3-34-1 Well-organized low-level cloud lines and a symmetrical pattern of cirrus outflow prompted the JTWC to issue a Tropical Cyclone Formation Alert shortly after the time of this picture (160531Z October visible GMS imagery).

### I. HIGHLIGHTS

Unusual southwestward motion brought Typhoon Teresa on a path across the central Philippine islands where it caused loss of life and much damage. The forecast performance of the objective guidance was especially poor as Teresa impacted the Philippines. Teresa was the westernmost tropical cyclone of a multiple outbreak that, at one point, featured four tropical cyclones in the western North Pacific.

### II. TRACK AND INTENSITY

By mid-October, deep convection began to increase in the low latitudes of the western North Pacific, especially east of 140°E where westerly winds south of the monsoon trough increased. The atmospheric conditions leading to the formation of Teresa are included in Verne's (33W) summary.

The tropical disturbance that became Teresa was first mentioned on the 150600Z October Significant Tropical Weather Advisory. At this time, an area of deep convection had consolidated about 300 nm (550 km) east of the southern Mariana Islands. This disturbance moved westward and passed near Saipan at approximately 160600Z (Figure 3-34-1). A Tropical Cyclone Formation Alert was issued at

160730Z, followed by the first warning on Tropical Depression 34W at 170000Z. The system was upgraded to Tropical Storm Teresa at 170600Z. Moving westward at a steady 14 kt (25 km/hr), Teresa intensified at a normal rate and became a typhoon at 190600Z. The peak intensity of 80 kt (41 m/sec) was reached at 191800Z (Figure 3-34-2). Teresa was then only 300 nm (550 km) east of the Philippine island of Luzon and heading west-southwestward. Between the hours of 200600Z and 210600Z, the system crossed southern Luzon, passing just south of Manila (Figure 3-34-3). Emerging into the South China Sea after crossing southern Luzon, Teresa had weakened to 50 kt (26 m/sec). In response to steering influences of a strong northeast monsoon over the northern half of the South China Sea, Teresa continued to move southwestward, losing about 4 degrees of latitude (14.5°N to 10.5°N) between 210600Z and 231200Z. During this time period, the system slowly reintensified and by 231200Z it became a typhoon. Upon reaching typhoon intensity for a second time, Teresa turned toward the west and its speed of forward motion slowed to 5 kt (10 km/hr). Moving westward toward the coast of southern Vietnam, Teresa began to weaken. The final warning was issued at 260000Z as the system continued to weaken over water. The remnants of Teresa made landfall on the coast of southern Vietnam shortly after 261200Z, and passed over Ho Chi Minh City at approximately 270000Z.

### III. DISCUSSION

#### a. A NEXRAD view of Teresa

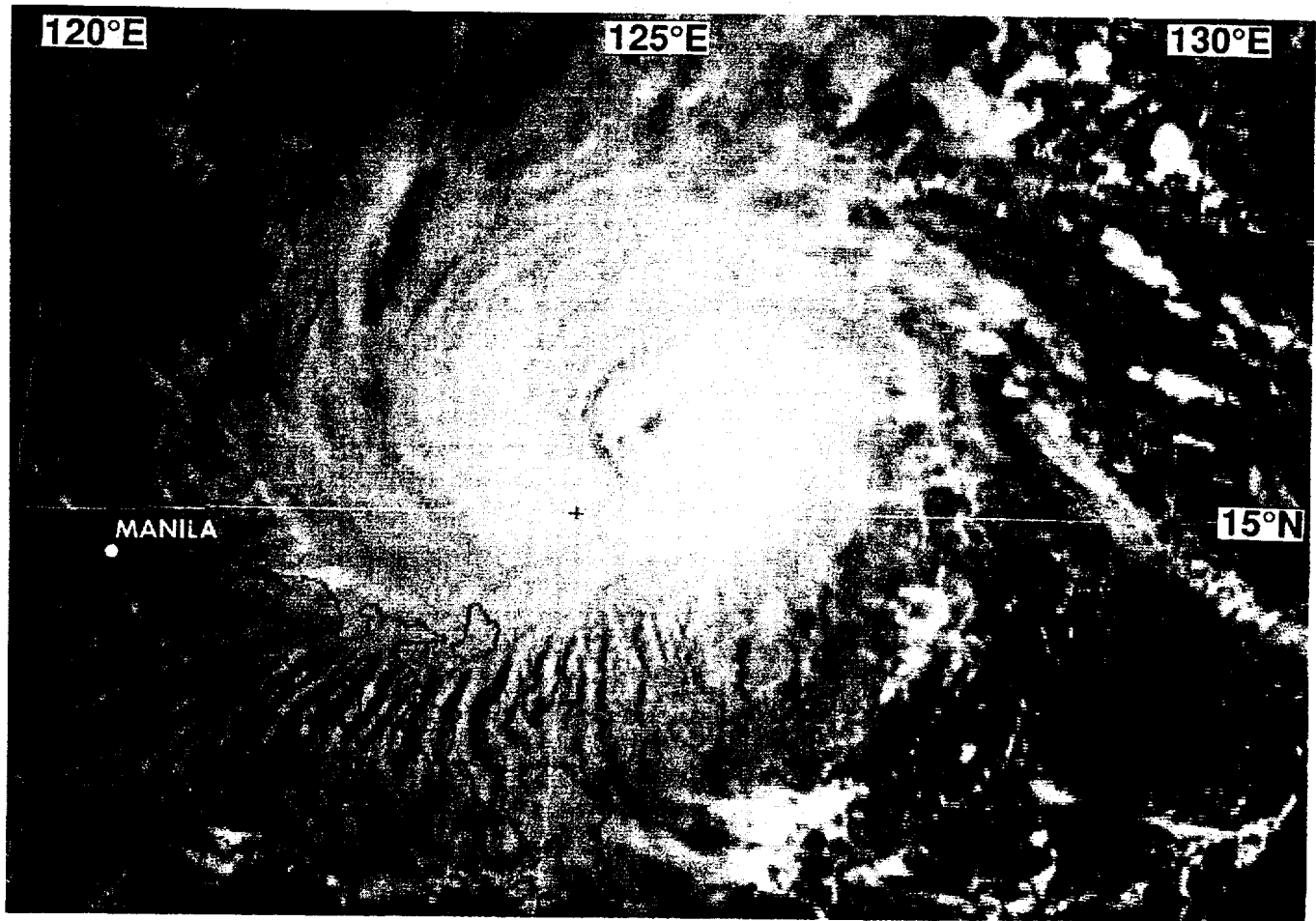
When the tropical disturbance that became Teresa passed near Saipan, it came just within the 124 nm (230 km) Doppler range of Guam's NEXRAD. A velocity cross section was obtained through its center at 160736Z (two hours after the visible satellite imagery in Figure 3-34-1). The NEXRAD velocity cross section revealed a cyclonic circulation extending from 15,000 ft (the lowest beam elevation) upward to 30,000 ft (the highest elevation of precipitation targets). The peak inbound velocity of 18 kt (9 m/sec) was located about 40 nm (75 km) to the west of the peak outbound velocity of 14 kt (7 m/sec).

#### b. Forecast performance

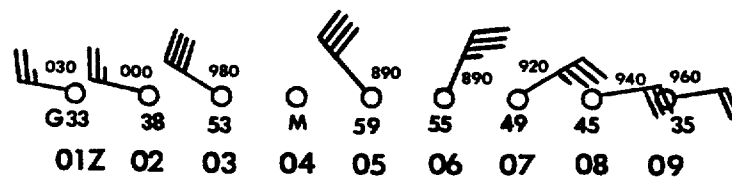
The overall official track forecasts for Teresa were exceptionally good. At two periods, the objective track guidance became unreliable: shortly before landfall in the Philippines, and later, as the system neared the coast of Viet Vietnam. While it was east of the Philippines, the objective guidance called for Teresa to stall east of the Philippines. This bias in the objective guidance was detected quickly, and the official forecast brought Teresa across the Philippines and into the South China Sea. As Teresa neared the coast of Vietnam, the NOGAPS numerical guidance exhibited a bias to the north of track. This bias was also quickly detected, and the official forecast did not err as drastically.

### IV. IMPACT

Teresa swept across Manila and nearby provinces on the Philippine island of Luzon. Its typhoon intensity winds uprooted trees, toppled utility poles, and destroyed homes and crops. Six people were reported killed by falling trees and flying debris. In a separate incident, 17 people were reported to be dead or missing when a Maltese oil tanker, the *Thanassis A*, sank in the South China Sea in heavy seas associated with Teresa and the Northeast Monsoon. Nineteen other crew members were rescued.



**Figure 3-34-2** The low sun angle of morning helps to bring out the structure of Teresa's cloud system about eight hours prior to reaching its peak intensity (192224Z October visible GMS imagery).



**Figure 3-34-3** Hourly synoptic data recorded at Manila (WMO 98429) during Teresa's passage a short distance to the south of the city. Wind flags show sustained wind. The time of observation, gusts, and sea-level pressure are indicated.